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## NOTICE OF ALLOWANCE AND FEE(S) DUE

45209 7590 07/01/2008

INTEL/BLAKELY  
1279 OAKMEAD PARKWAY  
SUNNYVALE, CA 94085-4040

EXAMINER

LEE, CHUN KUAN

ART UNIT

PAPER NUMBER

2181

DATE MAILED: 07/01/2008

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/728,962

12/08/2003

Deborah T. Marr

042390.P7941C

9038

TITLE OF INVENTION: METHOD AND APPARATUS FOR PAUSING EXECUTION IN A PROCESSOR OR THE LIKE

| APPLN. TYPE    | SMALL ENTITY | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|--------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | NO           | \$1440        | \$300               | \$0                  | \$1740           | 10/01/2008 |

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

#### I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
or Fax (571)-273-2885**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

45209 7590 07/01/2008

**INTEL/BLAKELY  
1279 OAKMEAD PARKWAY  
SUNNYVALE, CA 94085-4040**

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

|                    |
|--------------------|
| (Depositor's name) |
| (Signature)        |
| (Date)             |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/728,962 12/08/2003 Deborah T. Marr 042390.P7941C 9038

**TITLE OF INVENTION: METHOD AND APPARATUS FOR PAUSING EXECUTION IN A PROCESSOR OR THE LIKE**

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|-------------|--------------|---------------|---------------------|----------------------|------------------|----------|

nonprovisional NO \$1440 \$300 \$0 \$1740 10/01/2008

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|----------|----------|----------------|
|----------|----------|----------------|

LEE, CHUN KUAN 2181 712-220000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_
- 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

**NOTE:** The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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| 10/728,962  | 12/08/2003  | Deborah T. Marr      | 042390.P7941C       | 9038             |
| 45209   | 7590        | 07/01/2008           | EXAMINER            |                  |
| INTEL/BLAKELY<br>1279 OAKMEAD PARKWAY<br>SUNNYVALE, CA 94085-4040 |             |                      | LEE, CHUN KUAN      |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2181                |                  |
| DATE MAILED: 07/01/2008   |             |                      |                     |                  |

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

**Notice of Allowability**

Application No.

10/728,962

Applicant(s)

MARR ET AL.

Examiner

Art Unit

Chun-Kuan Lee

2181

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 04/23/2008.
2. ☒ The allowed claim(s) is/are 21-26,28,29,32-34 and 36-41.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date ____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date ____     | 7. <input type="checkbox"/> Examiner's Amendment/Comment                              |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other ____.   |

## DETAILED ACTION

### **TERMINAL DISCLAIMER**

1. The terminal disclaimer filed on 2/16/2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent Number 6,671,795 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### **ALLOWABLE SUBJECT MATTER**

2. Claims 21-26, 28-29, 32-34 and 36-41 are allowed.
3. The following is an **Examiner's Statement of Reasons for Allowance**, See **MPEP 1302.14**:

The primary reasons for allowance of claim 21 in the instant application is the combination with the inclusion in the claim that there are "**... determining whether an instruction of a first thread is of a first type ... pause execution of instructions of the first thread upon determining that the instruction is of the first type while executing instructions from a second thread ... resuming execution of a second microinstruction decoded from the instruction after retirement of a first microinstruction decoded from the instruction ...**" The prior art of record including the disclosure of Emer et al. (US Patent 6,493,741) neither anticipates nor renders obvious the above recited combination. Because claims 22-25 depend directly or

indirectly on claim 21, these claims are considered allowable for at least the same reasons noted above.

The primary reasons for allowance of claim 26 in the instant application is the combination with the inclusion in the claim that there are "**... determining whether an instruction of a first thread is of a first type ... initiating a counter upon determining that the instruction of the first thread is of the first type, wherein the instruction of the first thread includes an operand and the initiating includes loading the counter with a value of the operand ... pausing execution of instructions of the first thread until the counter reaches the value of the operand while executing instructions of a second thread at a pipeline stage ...**" The prior art of record including the disclosure of Emer et al. (US Patent 6,493,741) neither anticipates nor renders obvious the above recited combination. Because claim 28 depends directly on claim 26, claim 28 is considered allowable for at least the same reasons noted above.

The primary reasons for allowance of claim 29 in the instant application is the combination with the inclusion in the claim that there are "**... a decode unit to determine whether an instruction of a first thread is of a first type, said decode unit to pause execution of instructions of said first thread upon determining that the instruction of the first thread is of the first type by generating a first microinstruction to cause a value to be stored in a memory for the first thread**"

**while instructions from a second thread can be executed, said decode unit further to generate a second microinstruction upon which execution is to resume after retirement of the first microinstruction ...**" The prior art of record including the disclosure of Emer et al. (US Patent 6,493,741) neither anticipates nor renders obvious the above recited combination. Because claims 32 and 37 depend directly or indirectly on claim 29, these claims are considered allowable for at least the same reasons noted above.

The primary reasons for allowance of claim 34 in the instant application is the combination with the inclusion in the claim that there are "**... a decode unit to determine whether a first instruction for a first thread is of a first type ... a counter coupled to the decode unit, the counter to be loaded with a value of an operand of the first instruction if the first instruction for the first thread is of the first type, the decode unit to pause executing instructions of the first thread until the counter reaches the value of the operand ... wherein instructions for a second thread can be executed while the instructions of the first thread are paused from being executed ...**" The prior art of record including the disclosure of Emer et al. (US Patent 6,493,741) neither anticipates nor renders obvious the above recited combination. Because claims 36 and 38 depend directly on claim 34, these claims are considered allowable for at least the same reasons noted above.

The primary reasons for allowance of claim 39 in the instant application is the combination with the inclusion in the claim that there are "... a queue ... a decode unit coupled with the queue to receive and decode a pause instruction of a first thread, the decode unit in response to the pause instruction to pause execution of instructions of the first thread for a period of time while instructions from a second thread are executed and the decode unit in response to the pause instruction to generate a microinstructions that is to be queued in the queue during the period of time, and the decode unit further to cause resumption of execution of instructions of the first thread after the period of time ..." The prior art of record including the disclosure of Emer et al. (US Patent 6,493,741) neither anticipates nor renders obvious the above recited combination.

The primary reasons for allowance of claim 40 in the instant application is the combination with the inclusion in the claim that there are "... a decode unit to receive and decode a pause instruction of a first thread, the decode unit in response to the pause instruction to pause execution of instructions of the first thread while instructions from a second thread are executed by generating a first instruction and a second instruction, the first instruction to set a flag before being forwarded to an execution unit and the second instruction to prevent the instructions of the first thread from being executed until after the flag has been reset after retirement of the first instruction ..." The prior art of record including the



Art Unit: 2181

disclosure of Emer et al. (US Patent 6,493,741) neither anticipates nor renders obvious the above recited combination.

The primary reasons for allowance of claim 41 in the instant application is the combination with the inclusion in the claim that there are "**... decoding the pause instruction ... loading a value of an operand of the pause instruction into a counter ... pausing execution of instructions of a first thread from which the pause instruction was received while instructions of a second thread are executed until the counter reaches the value of the operand ... resuming execution of instructions of the first thread after the counter reaches the value of the operand ...**" The prior art of record including the disclosure of Emer et al. (US Patent 6,493,741) neither anticipates nor renders obvious the above recited combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Kuan (Mike) Lee whose telephone number is (571) 272-0671. The examiner can normally be reached on 8AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alford Kindred can be reached on (571) 272-4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C.K.L./

June 19, 2008

Chun-Kuan (Mike) Lee  
Examiner  
Art Unit 2181

/Alford W. Kindred/

Supervisory Patent Examiner, Art Unit 2181